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AUTHOR Marino, Jacqueline L.; And Others
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ABSTRACT

Drawing upon research on the composing process and schema theory, a study explored the effects of a generative writing task presented prior to reading on the delayed recall of fourth grade students. The purpose of the study was to determine if a writing task that required the learner to identify with events in a text to be read later would assist in building a cognitive framework into which text content could be assimilated. Subjects were all fourth grade students in a suburban school in the eastern United States. The two classes in the experimental treatment were asked to read a statement inviting them to pretend they were living in a particular historical setting and then write a letter to their grandparents describing the experience. They were not told of the related reading assignment to follow. The two control classes were asked to write a description of an event that had really happened that might be of interest to others. All students read the same passage, and all were told to remember as much of it as they could for the recall test the following day. Results showed that students exposed to the generative writing task recalled significantly more of the subsequent reading assignment than did those who wrote the unrelated narrative. In addition, lower achieving experimental group students scored significantly higher on the recall test than did their control group counterparts. (Stimulus materials are appended.) (FL)

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Building Schema Through Writing:

The Effects of Writing as a Pre-Reading Activity on Delayed Recall of Narrative Text

Jacqueline L. Marino, Ed.D.
Associate
Bureau of English/Reading Education
New York State Education Department
Albany, New York 12234

Sandra M. Gould, Ed.D.
Principal
Mahopac Falls Elementary School
Mahopac, New York 10541

Lester W. Haas, Ph.D.
School Psychologist
Guilderland Central Schools
Guilderland, New York 12084

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Abstract

Building on research on the composing process and schema theory, this study explored the effects of a generative writing task presented prior to reading on the delayed recall of fourth grade students. The purpose of the study was to determine if a writing task which required the learner to identify with events in the text to be read later would assist in building a cognitive framework into which text content could be assimilitated. Of particular interest were the effects on those lowest-achieving students posited to be least likely to already possess a compatible schema for understanding. Employing a treatment by level design, with random assignment of groups to treatment followed by matched pairing of randomly selected students, the data support ($P < .01$) the first hypothesis: that students exposed to the generative writing task recalled significantly more of the subsequent reading assignment than did students who wrote an unrelated personal narrative before reading. In addition, post hoc comparisons revealed that the lower achieving experimental students scored significantly better on the test of recall than did the lower achieving control students. These findings corroborate previous research demonstrating that tasks which promote the active integration of prior knowledge with text information facilitate reading recall. These results further suggest a theoretical framework for integrating reading and writing, as well as a parsimonious procedure for doing so. Of particular interest is the suggestion that lower achieving students may stand to profit most from further investigation in this area.

The pedagogical literature abounds with suggestions for linking writing to reading. The language experience approach, for example, (Allen, 1976; Smelstor, 1979) is based on the use of children's written or dictated stories as the focus for reading instruction. Other procedures capitalize on the reader's and writer's use of organizational patterns in text (Ribovich, 1977) or the skills common to both processes, such as categorizing, sequencing, synthesizing and interpreting (Hennings, 1982).

But, while the notion of combining writing and reading instruction is intuitively appealing, the body of research underlying such integration is slim and noticeably atheoretical. Research has been limited to correlation studies (Evanechko, Ollila and Armstrong, 1974); studies investigating the relationship between the written use and comprehension of certain linguistic structures (Evans, 1979); and the effects of practicing a syntactic strategy such as sentence combining on reading comprehension (Hughes, 1975; Klein, 1980).

Thus, however much discussion there has been of reading and writing as "reciprocal mutually-reinforcing processes" (Elkind, 1976), the writing/reading research to date reflects a view of writing as the production of linguistic forms and reading as the recognition of those forms. It appears that none of the integration research has

kept pace with insights emerging from separate investigations of reading and writing. The purpose of this paper, and the focus of this research, is to bring together understandings from the two fields of interest in an attempt to offer a theoretical rationale for integrating reading and writing.

One promising line of research is that involving schema theory. In this model, comprehension occurs when information in the text is integrated with the reader's schemata, or prior knowledge of the world. These schemata include one's conceptual knowledge, language patterns and expectations regarding the content and organization of the material to be read (Adams and Bruce, 1980).

Support for this theory comes from studies in which readers' comprehension is shown to be strongly influenced by cultural perspective (Steffensen, et. al., 1979-80), expectations of story structure (Mandler and Johnson, 1977), familiarity of content (Taylor, 1979) and point of view (Black, Turner and Bower, 1979).

Applying schema theory to practice, Wittrock (1974, 1981) has proposed a generative model of instruction:

> According to this model..., teachers can facilitate reading comprehension by inducing readers to attend to the text, to relate their knowledge and experience to it, and to build associations, abstractions, and inferences from it (1981, p. 45).

Accordingly, Linden and Wittrock (1981) investigated the effects of requiring students to generate text-related, imaginal associations during reading. This task facilitated comprehension of the material by capitalizing on relationships between the text and the reader's pre-existing schemata. Linden and Wittrock's findings are congruent with the research on other orienting tasks, such as advance organizers (Ausable, 1978), imagery (Paivio, 1971), and student-generated questions (Chodos, Gould, and Rusch, 1976).

But accepting schemata as requisite to comprehension leaves unanswered a critical questions: what can the instructor do to create a framework for comprehension when the reader's background knowledge is limited?

One answer is suggested by research on the composing process. Research in this area is several paces behind examinations of the reading process, in that most studies have been limited to what writers do when they write. What writing does for the writer is still to be investigated, yet a hint of its active role in mental processing appears in Emig's (1977) description of writing as a "unique mode of learning". Similarly, Moffett (1968) speaks of constructing hypotheses, relationships and interpretations in the process of creation, and Britton (1972) refers to the power of language in representing, interpreting and shaping our experiences.

Thus, we have an understanding of comprehension as being dependent upon the schema available to the reader, and an understanding of writing as a schema-building process. With this in mind, the present investigators asked what would be the effect of a generative writing task which capitalized on the writing process to build schemata for comprehension. Such a task, we reasoned, should have particularly facilitative effects on the comprehension of lower-achieving readers, who might lack appropriate schema for the material to be read.

In the study reported here, experimental subjects were given a writing assignment prior to reading, which required them to identify with the event in the text to be read later and which, we speculated, would create a cognitive framework into which text content could be assimilated. Control students were assigned a non-text-related personal narrative of comparable length. Effects of these pre-reading tasks on comprehension were assessed 24 hours after reading, using a framed recall format.

While we were particularly interested in the effects of our intervention on the less capable students, we deliberately conducted our investigation in heterogeneous classroom settings in order to maximize generalizability of our findings. Two hypotheses guided our investigation:

1. Fourth grade students exposed to the text-related generative writing task (experimental S's) will score significantly better on a test of reading recall than those students assigned the personal non-text-related writing task ($p. < .05$); and

2. Lower achieving experimental S's will score significantly higher on the test of recall than control S's of comparable ability.

METHOD

Experimental Design

A treatment by level design was employed with random assignment of groups to treatment, followed by matched pairing of a random selection of students. The reading assignment and test of recall used were common to both groups. Times for task and test completion were held constant.

Population and Sample

The population of this study was the entire fourth grade enrollment in a suburban school in upstate New York. Two intact classroom groups were randomly selected to receive the experimental treatment, and two classes were assigned as controls.

Because high, average and low reading achievement levels were to be defined on the basis of the Reading Comprehension subtest scores of the California Achievement Test, an ANOVA of the raw scores of the entire population was made ($\overline{X}_{E_1} = 66$, $\overline{X}_{E_2} = 64.9$, $\overline{X}_{C_1} = 65.4$, $\overline{X}_{C_2} = 65$). The results were non-significant [$F(3, 91) = .16$] and gave assurance that the classrooms were essentially equal prior to the study.

Achievement levels of the parent population were subsequently defined in both experimental and control classrooms as follows:

High - Students who scored between the national percentiles of 82 - 98

Average - Students who scored between the national percentiles of 53 - 77

Low - Students who scored between the national percentiles of 30 - 47

Ten students were randomly selected from each of the three achievement-level parent populations and counterparts were selected in the control group based on national percentile of $\pm$ 2 percentile points and sex ($N_E = 30$, $N_C = 30$, $N_T = 60$).

Procedures

Students were instructed and tested in their own classrooms by their own teachers under standardized procedures. The total time allotted was constant at one-and-one-half hours; the half-hour writing task was followed immediately by a half-hour allowed for reading. Twenty-four hours later, all students were administered the half-hour recall test.

Experimental students were read a 75 word statement (See Figure 1) inviting them to pretend they were living in a particular historical setting and told to write a letter to their grandparents describing their experience. No mention was made of the related assignment to be read later. Control students were asked to write a description of an event that had really happened which might be interesting to others (See Figure 2). After all narratives were collected, all students were read the exact introduction to the text and told to read and remember as much as possible in preparation for the written recall to follow the next day.

All classes were assigned the writing and reading tasks as early in the day as possible and were subsequently tested as early the following day as possible.

Materials

All groups read the same 2,000-word abridged text titled Quicksand taken from R. Vander Loeff's (1961) Oregon at Last. The readability of this modified text was rated as low fifth reader level on the Fry graph (Fry, 1968).

The assessment instrument was a framed recall test designed by the authors. That is, a 550-word precis' of the story was developed, from which a total of 25 key phrases or clauses were deleted. An answer key consisting of a list of correct gist replacements was generated beforehand. As an example, correct replacements for the sentence: "They decided to travel on foot because _____," include "horses would attract Indians", "they didn't want anyone to hear them", or "they had to be quiet", but not because "they had no wagon" (or horses, etc.). All of the correct answers appeared in the reading itself and not in the information supplied in the 75-word, experimental writing assignment. All recall tests were scored blind by two of the authors to assure agreement on correctness of responses.

Results

Results were analyzed using a Treatment by Levels Analysis of Variance and are reported in Table 2. The Between Treatments analysis (main effects) supports Hypothesis 1 [$F(2, 59) = 9.21$, $p < .01$]. That is, students who responded to the text-related generative task (experimental S's) scored significantly better on the recall test than those writing the non-text-related personal narrative (control S's).

Non-significant interaction effects revealed that the experimental treatment did not have differential effects at the three treatment levels. The Between Groups analysis, however, indicates that there were significant inter-group differences. To determine the source of these differences, a Scheffe's post hoc multiple comparisons analysis was used. As seen in Table 3, four significant differences were revealed, of which only the comparison between lower achieving experimental and lower achieving control groups was of interest. Those results supported the second hypothesis, that the low experimental subjects would score significantly better than the low control subjects on the recall test.

Discussion

The intent of this research was to determine the effects of writing as a generative activity on fourth-grade students' recall of narrative text. Experimental students were assigned a pre-reading writing task which required them to identify with the historical event to be described later in the reading assignment. As predicted, delayed recall scores were significantly greater than those of students who wrote a non-text-related personal narrative prior to reading the same text. Post hoc comparisons revealed significant differences between recall scores of lower achieving experimental and control students, whom we had predicted would be most likely to lack relevant schemata for understanding. These results support the notion of using writing as an orienting task prior to reading. Grounded in schema and generative theories, this research suggests a theoretical framework for integrating reading and writing, as well as an efficient task specific procedure for doing so.

That the recall scores for the lower-achieving experimental students were nearly as high as those of the high-achievement control students has

important implications for classroom teachers, for they are understandably most interested in assignments which enhance comprehension for poorer readers. The assignment suggested here appears to be especially parsimonious. That is, it supplies the naive reader with an adequate set for understanding, appears to facilitate recall even for the skilled readers, yet is conservative of expensive teacher and class time.

But provocative as these results are, several questions remain unanswered.

First, did the experimental students recall more of the information they read because, as Wittrock's (1974, 1981) research has suggested, they were induced by the writing assignment to attend to the words and events in the text? Or did the request to identify with the main character in the text evoke an affective response, a personal interest, in those events?

Lacking a comparison group of protocols, it is impossible to answer this question, but there is support from both the literature on writing and this set of student compositions to suggest the role of personal investment in enhancing comprehension.

James Britton has said that "all knowledge is personal and anyone acquiring it must go through an expressive phase" (Britton, 1972). Similarly, Emig (1971) speaks of effective writing as being "active, engaged and personal," and Graves (1978) affirms the importance of allowing writers to "establish their own turf."

From the compositions themselves, virtually all of the experimental students focused on John Sager, whose situation they were asked to identify with. In spite of the directions to "describe this boy and the story he has told you," the students chose to write about their relationship with John, rather than speculate on the events that brought him to the Snake River. "I invited him to stay overnight," "We fished together," "We slept in the same tent," "He was like family," "We became really close" were some of the statements of affection and friendship appearing in the target protocols.

Some students predicted the problems John might encounter on his westward journey: "I'd think he'd meet wild animals or snakes" and "I bet he'll have to fight off Indians."

Others raised questions ("I wonder how they'll eat") and demonstrated their commitment to John by offering to write home again "when I get more information."

In short, the assignment to write before reading appeared to elicit the kinds of behaviors good readers do spontaneously: make predictions, ask questions, and create an investment in "wanting to know" (Smith, 1972). A follow-up study is underway, in which these behaviors will be systematically assessed, and in which the effects of pre-reading writing assignments varying in distance from the reader to the text will be studied.

A second question is related to the difference in genre between the two writing assignments. While both were "personal" in the sense that all students were asked to write from their own experiences, it is possible that the letter assignment, with its stated audience and purpose, is by its very nature a more "personal" task than narration. Further research on the parameters of effective writing tasks should control for this possibility.

A third concern, of course, is the question of whether recall was facilitated by the composing process itself or if these results would have been achieved by oral discussion. Hansen's (1981) research, in which second graders predicted events in an upcoming story based on their own previous experiences, supports the efficacy of oral discussion as a pre-reading strategy. Certainly one can discover ideas through talking; would the same hypotheses, relationships and interpretations be created if the same task were responded to in writing? Would they enhance post-reading comprehension to the same degree? A logical next step would be to address these questions.

Finally, the authors of the present study have suggested that the writing process may be used to build schemata for comprehension. The study was undertaken with the assumption that the experimental students would use the new knowledge embedded in the writing assignment to build associations with their prior experiences, and thereby create a framework for instantiating information from the text. The questions aroused by the results of the study, as well as informal analysis of the student compositions, suggest that the experimental subjects may have not so much used the new knowledge as activated prior knowledge. Such activation may have been achieved because instructions to identify with the

protagonist created an investment in "wanting to know", or because the act of writing a letter implies a personal involvement, or because of the power of the writing process in interpreting new experiences. This study represents a preliminary effort to determine if writing can be used to facilitate reading. Findings from this research suggest that it can. The question of exactly how this is accomplished awaits further study.

Table I - Scores on framed-recall test

Reading Subgroups	Experimental			Control		
	N	$\bar{X}$	SD	N	$\bar{X}$	SD
High	10	19.35	3.82	10	16	5.62
Average	10	12.6	2.42	10	11	7.62
Low	10	14.55	5.64	10	7.35	4.18
Total	30	15.5	4.95	30	11.45	6.82

Table 2 - Analysis of variance on framed-recall test

Source of variance	SS	df	MS	F
Between achievement levels	536.42	2	268.21	10.04**
Between treatments	246.04	1	246.04	9.21**
Interaction	82.07	2	41.04	1.52 N.S.
Between groups	864.54	5	172.91	6.47**
Within groups	1442.17	54	26.71	
Total	2306.71	59	39.1	

**$p < .01$

Table III - Results of Scheffe' Test for Multiple Comparisons

	Hi_E	Hi_C	AV_E	AV_C	Lo_E	Lo_C
Hi_E	0	3.35	6.75	**8.35	4.80	**12.0
Hi_C		0	3.40	5.00	1.45	** 8.65
AV_E			0	1.60	-1.95	5.25
AV_C				0	-3.55	3.65
Lo_E					0	**7.2
Lo_C						0

**p. < .01

Figure 1

Assignment for Experimental Group

Pretend you are a young person in 1845. You are a pioneer heading for the Oregon country. You and your family have stopped to make camp for the night on the Snake River when you meet a group of young orphans. The oldest is a 13 year old boy who tells you of his determination to carry on with his father's plan to take the family to Oregon. John, you learn, is a very brave and clever boy who has just saved his sister from drowning. Write a letter home to your grandparents describing his boy and the story he has told you.

Figure 2

Assignment for Control Group

Think of something that has really happened to you that others might want to read about. Write a description of that event, remembering to include as many details as you can to make it interesting.

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